

3.13-3.16 Review

Name _____ Date _____ Period _____

Find the exact value of each expression. Leave answers in terms of π when necessary.

1. $\sin^{-1}(-0.5)$

2. $\arctan(-1)$

3. $\sec^{-1}(\sqrt{2})$

4. $\cos\left(\arcsin\left(\frac{1}{2}\right)\right)$

5. $\tan\left(\arccos\left(\frac{\sqrt{2}}{2}\right)\right)$

6. $\sin^{-1}\left(\sin\left(-\frac{\pi}{4}\right)\right)$

7. $\sin^{-1}\left(\sin\left(\frac{3\pi}{4}\right)\right)$

8. $\cos^{-1}\left(\cos\left(-\frac{\pi}{6}\right)\right)$

9. $\csc^{-1}\left(\sec\left(\frac{\pi}{3}\right)\right)$

Find the exact value of each expression in degrees.

10. $\sin^{-1}(1)$

11. $\arccos\left(-\frac{1}{\sqrt{2}}\right)$

12. $\cot^{-1}(\sqrt{3})$

13. $\operatorname{arccot}(0)$

Find all real numbers in $[0, 2\pi]$ that satisfy each equation.

14. $\cos(x) + 1 = 0$

15. $2\sin(x) - 1 = 0$

16. $2\tan(x) + 2 = 0$

Find all angles in $[0^\circ, 360^\circ]$ that satisfy each equation.

17. $2\sin(x) + 1 = 0$

18. $2\cos(x) = \sqrt{2}$

19. $\sqrt{3}\tan(x) - 1 = 0$

Find all angles in $[0^\circ, 360^\circ]$ that satisfy each equation. Round approximations to the nearest tenth of a degree.

20. $\sin \alpha = -0.244$

21. $\cos \alpha = -0.158$

22. $\cot \alpha = -.433$

Find all real numbers in $[0, 2\pi]$ that satisfy each equation.

23. $2\sin(2x) - \sqrt{3} = 0$

24. $2\cos(2x) + \sqrt{3} = 0$

25. $\sqrt{2}\cos\left(\frac{x}{2}\right) - 1 = 0$

26. $\sqrt{3}\tan\left(\frac{x}{2}\right) + 1 = 0$

Find all real numbers in $[0, 2\pi)$ that satisfy each equation. Round approximate answers to the nearest tenth.

27. $2\tan^2 x = \tan x$

28. $2\sin^2 x + \sin x = 1$

$$29. 6\sin^2 x + 5\cos x = 7$$

$$30. \sin\left(\frac{\pi}{6}\right)\cos x - \cos\left(\frac{\pi}{6}\right)\sin x = -\frac{1}{2}$$

$$31. \cos x \cos 2x - \sin 2x \sin x = \frac{1}{2}$$

$$32. \sin(2\theta) = 3\sin(\theta)$$

$$33. 9\sin^2 \theta + 6\sin \theta + 1 = 0$$

$$34. 2\cos^2 \theta + 1 = 3\cos \theta$$

35. A block is set in motion hanging from a spring and oscillates about its resting position at $x = 0$ according to the friction $x = 0.6\sin 2t + 0.4\cos 2t$, where x is in centimeters and t is in seconds. For what values of t in the interval $[0, 3]$ is the block at its resting position $x = 0$?